

Observations on the Economy of the *Ichneumon manifestator*, Marsham  
(*nec* Linn.). An Historical Note. By CLAUDE MORLEY, F.E.S.  
(Communicated by E. A. COCKAYNE, F.L.S.) (With text-figure.)

[Read 4th February, 1909.]

So long ago as the year 1794 a former Hon. Secretary of the Linnean Society, Thomas Marsham, author of the earliest work exclusively devoted to British beetles\*, read before this Society a Memoir † upon “Economy of the *Ichneumon manifestator*, Linn.”; and this has subsequently been oft-quoted as the most complete account we have had, even to the present time, of the habits of the genus *Ephialtes*, Schr., though the identity of the species referred to with that described by Linnæus has frequently been doubted and never satisfactorily established. Marsham’s description of it: “Corpore atro immaculato, abdomine sessili cylindrico, pedibus rufis,” might be applied with equal accuracy to all the members of this genus, in such a manner that, in my ‘*Ichneumonologia Britannica*’ ‡, I was obliged to place these most valuable observations generically, for to append them to any specified species would be invidious, excepting in the case of *Ephialtes manifestator*, Linn., itself; and that Marsham’s insect differed from the last named species is made abundantly plain by his drawings on pl. iv. p. 29. These agree, as I have remarked (*op. cit.* p. 32), very much better with *Ephialtes carbonarius* than the species indicated, and none of them are more than 17 mm. in length, whereas the actual species never attains maturity at a smaller size than 21 mm.

It may not be out of place, perhaps, to notice the interesting habits of the species given by Marsham. He says that he first observed the insect, of which the male was unknown to him, sitting on an old post in Kensington Gardens on 9th June, 1787. It was feeling over the wood with its curved antennæ and, on finding the burrow of some insect, they were thrust into it up to their bases §; the horns were withdrawn and again inserted, until the insect was assured that the victim, for whom she destined her eggs, was present and in a fit condition to receive them. Then her position was reversed and the long ovipositor intruded into the hole, in one or two instances so far that the body was also concealed,

\* *Entomologia Britannica*—Coleoptera. 1802.

† *Trans. Linn. Soc.* iii. (1797) pp. 23-29 et figg.

‡ ‘*The Ichneumons of Britain*,’ vol. iii. pp. 31-33 (MM. Brown, 20 Fulham Road, S.W.), 1908.

§ *Cf.* Kirby, ‘*Monographia Apum Angliæ*,’ i. p. 186, et ii. p. 251.

leaving only the head, wings, anterior legs, and apices of the terebral valvulæ visible. On the 16th of the same month many were observed at work in this manner: they appeared to pierce the solid wood with their ovipositor, but in reality it was inserted into a previously bored and filled-in hole, through the fine white sand closing the burrows of a bee, *Apis maxillosa*, now known as *Chelostoma florissomne*, Linn. In October, he saw another female on a post at Lessness Heath, near Erith; this had its ovipositor fixed in a hole, and he himself had to withdraw it. He noticed the same species at work annually (showing they were much commoner then than now, when no member of the genus is frequently met with, and after ten years collecting I have captured but some half dozen of the single species, *E. carbonarius*, Christ.); and on 23rd July, 1791, he saw one standing directly over the burrow of *Apis maxillosa*, with the ovipositor in the burrow and its hind femora steadying the abdomen. It frequently withdrew its ovipositor a quarter or three-eighths of an inch and then plunged it in again with great force, with a pulsatory movement of the anus, as though through the passage of an egg.

This last remark so closely relates the parasite with its host, that it is only on account of the utter lack of all subsequent\* observation, both here and abroad, of the oviposition of *Ephialtes* or any member of the subfamily *Pimplinae*, to which this genus belongs, in other species of Hymenoptera that we are led to suspect Marsham of having been in error in supposing the host to have been *Chelostoma*. Mr. Fred. Smith first suggested † that some mistake had crept in; and this is by no means impossible, for no mention is made of the host having been examined: it was simply inferred from the shape and size of the orifice, and the manner in which it was filled in. Smith remarks that, where colonies of this bee are met with in posts and rails, there are usually also two Coleopterous insects, *Melandrya caraboides* and *Clytus arietis*, depositing their eggs; and that it is, perhaps, upon one or other of these that the ichneumon preys. But though certainly more probable, I can hardly suspect so good an entomologist as Marsham ‡ of mistaking the distinctly elongate borings of the Longicorn for the circular burrows of the bee.

\* It must, however, not be lost sight of that Réaumur (*Mémoires pour servir à l'histoire des Insectes*, vi. (1741), p. 304; quoted by James Rennie, 'Insect Transformations,' 1830, p. 57) had noticed "*Pimpla manifestator*, Grav.," ovipositing through the barricadoed orifice of the nest of the Mason Wasp (*Odynerus murarius*, Linn.); though there is something bizarre about the parasite "waiting patiently till the wasp, having laid in a store of caterpillars for the young one, closes up the doorway, in order to find a nest ready prepared and stocked with provisions for her own progeny"!

† 'Catalogue of British Bees,' p. 188.

‡ See the "Journal of Mr. Kirby's Excursion with Mr. Marsham to Northamptonshire," in 'Life of the Rev. William Kirby, M.A., F.R.S., F.L.S., etc., Rector of Barham,' by John Freeman, M.A. Longmans, 1852, pp. 79-112.

And this was the position arrived at, at the time of publication of my volume on the Pimplinæ\*.

Mr. E. A. Cockayne, F.L.S., F.E.S., has recently sent me a specimen of *Ephialtes extensor*, Tasch., a common Continental species which had not hitherto been noticed in Britain, for determination; and subsequently generously presented me with the specimen. His notes upon it are so extremely similar to those of a hundred and twenty years ago that I quote them *in extenso*. Near the Round Pond in Kensington Gardens at 5.45 P.M. on September 7th, 1908, he saw this ichneumon fly sitting on the trunk of an old oak. It appeared at first sight to be at rest, but on closer examination was found to be engaged in oviposition. The head was depressed and the abdomen slightly raised with the sheath of the ovipositor sticking straight out behind. The



ovipositor itself was pushed through a small congregation of dark brown frass on the bark, and pointing forward (see figure) at an acute angle with the body †. The insect kept gently and slowly pushing its ovipositor further in and then withdrawing it again, but never pushing it very deeply nor entirely withdrawing it: as if feeling for a larva. Sometimes it held it quite still for a second or two, as though very softly investigating with its tip. After about one minute or two it drew out its ovipositor entirely, and he then secured it. Upon investigating the burrow he discovered a larva of the clear-wing moth, *Sesia cynipaeformis*; it was about a quarter of an inch below the frass in a small chamber in the bark. It appeared to be about 10 mm. in length.

\* 'The Ichneumons of Britain,' vol. iii. pp. 31-33 (MM. Brown, 20 Fulham Road, S.W.), 1908.

† Cf. Marsham's drawings, 3 et 4.

Three interesting questions present themselves: Was Marsham's insect *Ephialtes extensor*, Tasch., now for the first time recorded as British? has it existed and propagated in Kensington Gardens ever since it was mentioned as found there so long ago? and, supposing *Ichneumon manifestator*, Msh. (*nec* Linn.) to be *Ephialtes extensor*, Tasch., have we determined whether it has predilections for a hymenopterous, coleopterous, or lepidopterous diet? Taschenberg\* quotes Panzer as the author of his species, but *Ichneumon extensorius*, Panz. †, is regarded by Dalla Torre ‡ as a synonym of *Ichneumon primatorius*, Forster §, belonging to a very different group of insects. As regards its Continental hosts, nothing at all reliable can be stated, since none have yet been instanced for the actual species; but two insects described under the allied genus *Pimpla* by Ratzeburg || have been doubtfully synonymized with it ¶, and these were originally bred from, respectively, *Cynips (Biorrhiza) terminalis (aptera)*, Bosc) and *Tortrix (Grapholitha) dorsana*, Rtz. (*pactolana*, Zll.); but these very hosts are so dissimilar as to render the synonymy extremely doubtful.

\* Zeitschrift für die gesammten Naturwissenschaften, Berlin, 1863, p. 255.

† 'Faunæ Insectorum Germaniæ Initia,' ii. (1794) p. 19, t. 10.

‡ 'Catalogus Hymenopterorum,' iii. (1901) p. 972. Dalla Torre is very certainly in error in regarding (*op. cit.* iii. p. 447) *Ephialtes extensor*, Tasch., as synonymous with *Pimpla roborator*, Fab.; and consequently the hosts he gives are valueless.

§ J. R. Forster, 'Novæ Species Insectorum,' London, 1771, p. 81.

|| 'Die Ichneumonen der Forstinsekten': (1) *Pimpla caudata*, Ratz., ii. 92; and (2) *Pimpla longisetæ*, Ratz., i. 117.

¶ By Schmiedeknecht, 'Opuscula Ichneumonologica,' iii. (1907) p. 1134.